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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q53818

Takayuki KIFUKU

Appln. No.: 09/286,418

Group Art Unit: 3661

Confirmation No.: 4951

Examiner: Brian J. Broadhead

Filed: April 06, 1999

For: ELECTRIC POWER STEERING SYSTEM

RESPONSE UNDER 37 C.F.R. § 1.111

Commissioner for Patents
Washington, D.C. 20231

RECEIVED

OCT 17 2002

GROUP 3600

34 Response
10/22/02
Holmes

Sir:

In response to the Office Action dated July 17, 2002, please consider the following remarks:

Claims 1, 2, and 4-20 are all the claims pending in the application.

Claims 1, 2, and 4-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kifuku et al. (US 5,740,040) in view of Setaka et al. (US 4,881,414). Applicant respectfully traverses the rejection as set forth below.

Independent claim 1 requires "a means of computing an estimated value of static friction of the steering system based on the steering force of a driver." The Examiner concedes that Kifuku et al. do not disclose this limitation of the claim, but asserts that Setaka et al. disclose the limitation. Applicant respectfully disagrees for the following reasons.

Setaka et al. relates to a torque detection apparatus for measuring a torque applied between a drive shaft and an output shaft which is applicable to an electric power steering system of a motor vehicle. The excerpt cited by the Examiner (col. 2, lines 12-15) simply states that it is "an object of the present invention to provide a torque detection apparatus which is capable of accurately detecting both rotational and static torques concurrently with apparatus size-reduction." However, neither this excerpt, nor any other part of Setaka et al., discloses or suggests a means of computing an estimated value of static friction of the steering system based on the steering force of a driver, as required by claim 1 of the present invention. Instead, Setaka et al. state that "the torque detection apparatus according to the present invention is arranged so as to form two magnetic circuits and to measure the torque between the first and second shafts on the basis of the difference of the magnetic fluxes flowing through the first and second magnetic circuits." Col. 3, lines 6-11. Thus, Setaka et al., like Kifuku et al., fail to teach or suggest the aforementioned limitation of independent claim 1.

Therefore, claim 1 and its dependent claims 2 and 4-20 are allowable over the prior art.

Furthermore, Applicant submits that there is no motivation or suggestion to combine the references. Kifuku et al. provide a means for compensating for static friction of a steering system, but static friction compensation of Kifuku et al. differs from that of the present invention, as briefly summarized below.

FIG. 31 of the reference, as well as the description at column 20, lines 34-39, which represents static friction compensation in the reference, clearly shows a static-friction compensating current calculation means 20 for compensating the static friction based on the

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estimated value of the static friction that uses vehicle speed V_s and a differentiated value of motor angular velocity ω as inputs to produce a static-friction compensating current target I_f . In other words, Kifuku et al. teach a technology of computation of steering assist current target value I_s based on a differentiated value of motor angular velocity and vehicle speed V_s , and does not teach or suggest a means for obtaining static friction of the steering system based on a driver's steering force (steering torque V_t) as disclosed by the present invention. Moreover, the static friction compensating current calculation means 20 of Kifuku et al. uses differentiated value of motor angular velocity ω . By contrast, the static friction compensation current computing means 10 of the present invention estimates the value of static friction of the steering system independently of the motor angular velocity ω .

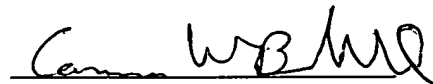
Since Kifuku et al. disclose its own static friction compensation, one of ordinary skill in the art would not have been motivated to combine the alleged static friction teachings of Setaka et al. with Kifuku et al. Therefore, claims 1, 2, and 4-20 are allowable over the prior art for this additional reason.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Cameron W. Beddard", written over a horizontal line.

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